

**ABSTRACT**

A multifrequency antenna comprising a stack of nonconductive substantially planar substrates, with a conductive layer disposed on each substrate surface. A first substrate includes transmission lines disposed on a rear surface and a conducting layer on the other surface. A second substrate is stacked on the first substrate. A conducting layer is disposed on one side of the second substrate surface. Conducting layers disposed on first and second substrates include a plurality of slotted openings arrayed about an antenna axis. A third substrate stacked on the second substrate includes a conducting layer top. A lossy dielectric-magnetic material encloses sides and rear of the multifrequency antenna, to prevent electromagnetic energy penetration through the enclosure. An edge diffraction suppresser reflector is attached in the rear surface of the multifrequency antenna, and has two or more essentially circular, conducting plates and a multitude of conducting cylinders along the axis of the multifrequency antenna.

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